Domestic Violence Law Enforcement and Women's Labor Market Participation

Vinicius Lima*

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Abstract

This paper investigates the effects of a policy aimed at enforcing the combat against domestic violence on women's labor market participation in a difference-in-differences framework using Brazilian data. While the primary objective is combatting domestic violence, it also redistributes bargaining power to women, placing them in a stronger position to implement their preferred allocation. The main finding indicates that a 60% decrease in the average distance of married women to a police station would lead to a 2.7% increase in their participation in the labor market. The effects are primarily driven by educated women, who are likely to have higher initial bargaining power. These findings shed light on the interplay between law enforcement, household dynamics, and labor market outcomes.

*Institute of Education and Research - Insper. E-mail: viniciusgl3@insper.edu.br.
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1 Introduction

Gender violence is a prevalent violation of human rights. About 27% of reproductive-age women have already experienced domestic violence at least once in their lifetime (World Health Organization, 2021). But the need for policies aimed at tackling this problem can go beyond the criminal dimension. Institutions that impose constraints on social interaction can shape the path of economic development (North, 1991). If domestic violence sustains gender barriers to women's participation in the labor market, reducing it might represent productivity gains (Ashraf et al., 2022).

In this paper, I analyze the impact of a policy aimed at curbing domestic violence on women's labor market participation rate. To estimate the effects, I explore the enactment of law 11340 in 2006 in Brazil as an exogenous shock that redistributed bargaining power within households in favor of women. The law gave police officers authority to request measures like removing offenders or making on-the-spot arrests for reported domestic violence cases. Besides improving the negotiation position of women, this empowered police stations as key implementers of the policy. The research hypothesis considers that the closer a woman lives to a police station, the more credible the threat of reporting a domestic violence case is, leading to a higher redistribution of bargaining power in favor of women. Proximity to a police station reduces the financial, opportunity, and emotional costs of reporting a domestic violence case, making it a more viable option for women in such situations. Thus, although every woman is protected by the law, the existing heterogeneity in accessing police stations implies that women living in different places might have different levels of exposure to the protection of the law.

Using a labor market survey from Sao Paulo, the world's fourth-largest urban area, I employ a difference-in-differences strategy to estimate the impact of the domestic violence policy on women's participation rate. The survey divides Sao Paulo into many regions and I construct a treatment variable based on the average minimum distance of women in each region to a police station. The identifying assumption is that, without the policy, participation rates in any two regions would evolve similarly, given region fixed-effects.

The first set of results is a descriptive analysis demonstrating the impact of law 11340 on police station activities. Data from women's special police stations reveal a substantial increase in arrest events and investigations initiated right after the law's approval (39% and 146%, respectively). Warrantless arrests also rose steadily, with an average three times higher after the law compared to the preceding period. Although data for these outcomes restricted to domestic violence cases are not available for all other police stations, I can indirectly infer they evolved similarly by observing that five years after the law's passing, standard police stations forwarded 19% more domestic violence cases to the State Prosecutor's Office than women's

special police stations.

The paper's main finding reveals that a 60% decrease in the average minimum distance to a police station leads to a 2.6% increase in the labor market participation rate of married women. The effect is roughly the same when controlling for individual demographics and variables to address potential confounders generated by policies implemented in the same period. As expected, no significant effects are observed on the participation rates of married men, since the law focused on women's protection. Additionally, using the distance to women's special police stations as the treatment variable I also do not find any effects. In 2012, the Brazilian Supreme Court strengthened law enforcement in cases of domestic violence by reinforcing some devices prescribed by law 11340. If I consider periods before and after this decision separately, the estimates for married women suggest a larger effect after the Supreme Court decision relative to the estimate for the period prior to the decision. However, one concern is that the law may have influenced the marriage market, potentially leading to a problem of selection on family unobservables driving the results. To address this issue, I pool the sample of men and women and estimate a differential effect of the law on women's participation rate with a triple-difference specification (time, distance, gender) that allows me to remove unobservables at the family level. Using this specification results in a 2.5% effect for both periods.

However, event-study estimates using the triple-difference specification indeed reveal a dynamic pattern. The estimate for 2012 is twice as large as the estimate for the preceding period, and after 2013 this is statistically indistinguishable from zero. There is evidence of a decrease in domestic violence after the implementation of the law with a noticeably stronger effect after 2012 (Ferraz and Schiavon, 2022). I interpret this pattern as revealing two distinct moments of the effects of law enforcement on participation rates. Right after its implementation, the law implied a new equilibrium with reduced domestic violence and increased labor market participation of women more exposed to it. Then, the strengthening of law enforcement in 2012 further reduced domestic violence and increased women's bargaining power, which ended up dissipating the different participation rates in the labor market of women of different regions. Finally, I show that the effects are driven entirely by the women who completed at least high school, which indicates that the policy had a more substantial impact on women with higher initial bargaining power (proxied by the educational level).

These results emphasize that besides addressing a severe violation of human rights, a policy aimed at tackling domestic violence can have significant economic implications by reshaping intrahousehold resource allocation through redistributing bargaining power among household members. The paper extends existing research on policies to deter domestic violence (Aizer and Dal Bo, 2009; Iyengar, 2009; Chin and Cunningham, 2019), demonstrating they can have broader economic impact and a potential to alleviate the misallocation of resources based on

gender norms (Hsieh et al., 2019). Besides, it contributes to an ongoing discussion about the implementation of special women police stations (Amaral et al., 2021; Perova and Reynolds, 2017; Jassal, 2020). It highlights that even standard police stations can also play a crucial role in addressing domestic, provided they operate within a well-defined legal framework.

The rest of the paper is organized as follows: the next section discuss the policy in detail and after that I describe a conceptual framework to interpret the effect I want to estimate. Then, I present the research desing along with the empirical strategy implemented to obtain the results presented in the subsequent section. I finish with a brief conclusion.

2 Institutional Background

In Brazil, there exists an old saying to express the belief that one should not interfere in an argument between a married couple.[1] This belief implies a notion that episodes of domestic abuse are a private family matter, rather than a social issue. Though, over the past few decades, women's rights advocacy groups have been actively working to transform domestic violence into a matter of public policy and to emphasize that this is a specific and prevalent type of crime.

The creation of the first Women Police Station in São Paulo, Brazil, in 1985 is a significant landmark in the effort to turn domestic violence into a public issue. A defining characteristic of the so-called *Women's Police Station* (WPS) should be that all police officers assigned to it were women. This gender composition aimed to ensure a more empathetic approach to victims of DV, in contrast to the service provided by Standard Police Stations (PS). Between 1985 and 2005, a total 22 WPS were created across the São Paulo Metropolitan Area, which is the world's fourth-largest urban agglomeration (United Nations, Department of Economic and Social Affairs, Population Division, 2019) with more than 20 million people living in 39 municipalities. The 1990s witnessed an expansion of various public services following the establishment of the Brazilian Constitution in 1988 that likely had some impact on domestic violence. However, the creation of the WPSs was the primary policy aimed at addressing the issue.

Originally, feminist organizations expected to collaborate with the government to train police officers and monitor their interactions with victims of domestic violence as the coverage of WPSs expanded. However, these expectations were not fulfilled, as the personnel composition at the stations and the implementation of training and monitoring programs did not align with the intended goals (Pasinato and Santos, 2008). A legal reform approved in 1995 (Brazil, 1995) further contributed to weak law enforcement in domestic violence cases by downgrading them

[1] *Em briga de marido e mulher ninguém mete a colher!*

to lesser offenses.

But in the early 2000s, significant institutional developments took place to address domestic violence.[2] An important result of this movement was the enactment of Law 11340/2006 (Brazil, 2006), known as the *Maria da Penha* Law (MPL), which is the cornerstone of the fight against domestic violence in Brazil. The MPL legally defined domestic violence as a crime and established that, beyond physical violence, domestic violence encompasses psychological, sexual, patrimonial, and moral abuse. Importantly, it aimed to simultaneously eliminate obstacles for victims of domestic violence seeking access to the justice system, while also establishing an institutional framework that restructured the legal foundation and enhanced law enforcement in cases of domestic violence. I discuss each of these dimensions and their implications in what follows.

2.1 Before the *Maria da Penha* law

Before the enactment of the MPL, victims of domestic violence should report the case at a police station, which would promptly submit a document detailing the incident to the prosecutor's office. This register of the occurrence could also include specific requirements, such as the need for a forensic examination if it constituted an assault case, for instance. Subsequently, both parties involved, along with their lawyers, would be summoned to attend a scheduled hearing in a fast-track court. The goal of this hearing was to strive for conciliation between the parties. Only if the woman involved did not agree to any form of conciliation during this stage would the complaint transform into a formal complaint to be processed in the standard criminal court, what could potentially lead to the arrest of the offender or other legal actions taken as deemed necessary within the criminal system.

The law governing these procedure was unrelated to domestic violence, and primarily aimed to expedite responses to less severe crimes. Its purpose was to alleviate the burden on the justice system by resolving cases quickly (Brazil, 1995). However, when combined with prevailing social norms, it often resulted in discouraging women from pursuing legal action against their perpetrators. In the year 2000, disputes between married couples constituted 52% of all the conciliation hearings held in Rio de Janeiro (6 million inhabitants). Only 4.6% of these cases followed to the criminal court, while 56.1% concluded with some form of agreement between the parties leading to lighter penalties, such as the payment of fines or the completion of com-

[2]For instance, Law 10455/2002 granted judges the authority to order the removal of offenders from the home if they posed a risk to the victim, even though the crime of domestic violence was not legally defined at that time. Furthermore, Law 10778/2003 mandated the reporting of domestic violence cases assisten in both private and public health systems. Law 10886/2004 introduced a specific definition of domestic violence into the Brazilian penal code as a form of assault. Additionally, Law 12015/2009, which originated from Bill 4850/2005, eliminated the term "honest woman" from the description of certain sexual crimes in the Brazilian penal code.

munity service by the offender. In the remaining 39.3% of the cases, the woman decided to withdraw the complaint (Burgos et al., 2002). [3] Thus, in many cases of an argument between a married couple, the justice system, working under this legal framework, intervened solely to somehow give the problem back to the family.

2.2 After the *Maria da Penha* law

The MPL directly confronted the legal obstacles that hindered effective law enforcement in domestic violence cases. It explicitly prohibited the use of conciliation hearings for resolving such cases and eliminated the possibility of imposing fines or community services as penalties for offenders. Additionally, the MPL established a legal framework that positioned police stations at the forefront of combating domestic violence.

Stronger law enforcement: The work at Police Stations Instead of immediately referring cases to the Prosecutor's Office as described above, police stations were now required to take certain actions in cases of DV. They were mandated to initiate an investigation in any assault case, which accounted for 25% of all cases reported at WPSs in Sao Paulo in 2006. Moreover, they were empowered to request immediate measures to remove the offender from the home and maintain distance from the victim when needed. Finally, MPL gave police officers the authority to make on-the-spot arrests in cases of domestic violence. Importantly, there was no specialization in terms of registering domestic violence cases solely at WPS in São Paulo. In 2007, 40% of the cases labelled as "Domestic Violence" was registered in Standard PSs, and the proportion increased to 49% in 2012.[4]

[3] Data on police and justice productivity for this period is scarce. Thus, it is hard to know what the 52% of the conciliation hearings means in relation to the overall number of domestic violence cases reported to the Rio de Janeiro police authorities. Beraldo de Oliveira (2006) reports that during a three-month period in 2001 in the city of Campinas (1 million inhabitants), approximately 75 cases of assault reported at the city's Women Police Station progressed to the conciliation audience. In the same period, that WPS registered 478 cases of assault according to the Sao Paulo State Government. Therefore, if all reported cases of domestic violence in the city were registered by the WPS, one can conclude that 15.7% of the reported cases were scheduled for a conciliation audience. Furthermore, if the 4.6% rate of formal judgments out of total concliation audiences in Rio de Janeiro was a good approximation to Campinas, an indirect estimate says that 1.4 cases of domestic violence assault cases per 100,000 people reached the trial phase in Campinas in 2001.

There is much more accurate data for 2012 in Campinas. During that year, the city's WPS registered 3,108 cases of domestic violence, out of which 1,137 were forwarded to the Prosecutor's Office. These figures accounted for 95% of all domestic violence cases from Campinas that reached the Prosecutor's Office that year. Additionally, out of those cases, 281 proceeded to the trial phase, resulting in a rate of 25.6 domestic violence assault cases per 100,000 inhabitants being adjudicated.

[4] After the MPL, all WPS continued to register crimes as "Assault", "Threat", and others. This suggests that the same occured in standard PS. While most of these reports can be attributed to domestic violence in the case of a WPS, it is impossible to know the share of DV cases being registered under labels different than "Domestic Violence" in Standard PSs.

Stricter law enforcement: The 2012 Supreme Court Decision The obligation to initiate an investigation in any case of assault resulting from domestic violence was loosely enforced. The correct application of this rule would significantly burden police stations and criminal courts. Police stations would be responsible for conducting investigations, while standard courts would have to handle cases that could no longer be sent to conciliation hearings. A very technical argument formed the basis for a significant degree of discretion in the application of this rule, resulting in a continued practice of referring numerous cases to conciliation hearings, despite the MPL explicitly prohibiting the use of such proceedings. The Brazilian Supreme Court was called upon to have a say in the interpretation of this matter, and in 2012 confirmed the MPL's provision: every assault case resulting from domestic violence must undergo a criminal investigation.

2.3 Law Enforcement: Descriptive Analysis

The outcomes depicted in Figure (1) illustrate the significant impact of this institutional development on the operation of police stations.

The average number of arrest events carried out by WPSs per quarter had a permanent increase of roughly 39%, going from 115 prior to the MPL to 160 after the implementaion of the law. Part of this rise can be attributed to the increasing participation of on-the-spot arrests in the total number of arrests. Before the implementation of the MPL, the average number of people arrested on the spot per WPS per quarter stood at 10, indicating that, on average, fewer than half of the WPS officers detained an offender immediately in a given quarter. However, following the MPL, the corresponding figure increased to 44, suggesting that, on average, each of the 22 WPS was responsible for apprehending two offenders per quarter.

The analysis of criminal investigations initiated at WPSs indicates that during the period following the implementation of the MPL but prior to the Supreme Court decision, the number of investigations increased 146%, from 1,295 to 3,183 cases. Furthermore, after the Supreme Court decision, there was a further 42% rise in the number of investigations.

It is likely that similar dynamics happened in Standard PSs as well. Unfortunately, the absence of disaggregated data on these same outcomes specifically addressing cases of domestic violence limits the ability to analyze what actually happened for these police stations. However, we can indirectly infer part of this information by examining the number of investigations forwarded to the Prosecutor's Office. In the first quarter of 2011, WPSs and Standard PSs collectively referred 525 cases of domestic violence to the Prosecutor's Office. By the first quarter of 2012, the office received 2,015 cases from both types of police stations. Subsequently, each type of police station averaged 1,205 domestic violence cases per quarter sent to the Prosecu-

tor's Office. Though, Standard PSs sent 1,308 cases quarterly, an average 18.7% greater than the average 1,102 cases forwarded by WPSs.

To conclude, it is worth noting that by 2012, each type of police station registered roughly half of the total reported DV cases. Thus, it is not surprising that the share of cases sent to the Prosecutor's Offices by Women and Standard PSs are also very similar. However, the significant disparity in the number of WPSs (22) compared to Standard PSs (175) resulted in cases labelled as "Domestic Violence" accounting for 34% of total reports at WPSs in 2012, while comprising only 3% of total reports at Standard PSs.

3 Conceptual Framework

A policy targeting domestic violence like the MPL can hold significant economic implications by reshaping intrahousehold resource allocation through the redistribution of bargaining power among household members.

Empirical evidence from various contexts challenges the assumption that households act as a single entity that maximizes the household's utility function subject to the its total income. Instead, resource allocation within households is likely to arise from negotiations determined by the distribution of bargaining power among members, each having distinct preferences (Fiala and He, 2017).

Important variables shaping the distribution of bargaining power within households, the distribution factors, have the characteristic of influencing decision-making without altering the individual preferences or budget constraints of household members (Browning et al., 2014). One prominent example of such a factor is the set of laws governing family dynamics. Changes in these laws, such as extending alimony rights or adopting unilateral-divorce laws, can influence the distribution of bargaining power in favor of women, leading to shifts in their allocation of time towards market work, for example (Rangel, 2006; Gray, 1998).

Besides, such legal changes not only affect the allocation of resources but can also have implications for other aspects of household dynamics. Changes in divorce laws has been found to be associated with changes in the level of domestic violence (García-Ramos, 2021; Brassiolo, 2016; Stevenson and Wolfers, 2006). This highlights the interconnected nature of domestic violence and labor supply in the household decision process.

The mechanism behind this type of impact on the distribution of bargaining power is the improvement of women's outside options, which is something present in the design of the MPL. The MPL enhances women's ability to leave abusive relationships and serves as a credible threat against abusers, ensuring their swift punishment or at least a removal from home once

domestic violence is reported to the authorities. Hence, the credibility of the threat should be increasing with the likelihood of reporting a domestic violence case to the police.

Given that police stations are a keystone of the policy implemented by the MPL, I should highlight different motives for why proximity to a police station should distinguish women in terms of the impact the MPL might have had on their nogotiating position within the household.

Living in close proximity to a police station reduces the financial and opportunity costs associated with reporting domestic violence incidents. Moreover, the convenience of easy access to the police authority reduces the need from third-party assitance and allows victims to directly report the case without having to share their story with other individuals, which can be challenging due to the stigma often associated with domestic violence cases. Also, the presence of a police station can contribute to public reassurance and act as a deterrent against potential perpetrators (Millie, 2012).

To conclude, it is important to note that during most of the period under analysis, WPSs operated only during business hours on working days, while Standard PSs operated 24 hours a day, every day. Additionally, the MPL's possibility of warrantless arrests may have led to a decrease in domestic violence cases redirected from Standard PSs to WPSs, which could represent a potential barrier to reporting as it implies a travel cost to victims (Jassal, 2020). Therefore, in measuring the potential impact of the MPL through the facilitated acscess to police stations on women's bargaining power, I will use the access to Standard PS rather than WPS, although I will also present results considering the distance to WPS.

4 Data

I use data from the Sao Paulo Metropolitan Area in the period 2001-2016. The sources of information include the Brazilian Census conducted in the year 2000, a quarterly labor market survey administered by the statistical agency of the Sao Paulo State Government, and different information from the SP State Department of Public Safety. In addition, I collected data on the evolution of the number of families enrolled in the Brazilian conditional cash transfer program, *Bolsa Família*. I keep in the sample only married couples in which both members are aged 24-65. Now, I provide a brief overview of each data source and the variables derived from them.

Regions baseline characteristics To capture the socioeconomic heterogeneity across the regions of the SP Metro Area I constructed region-level variables using data of the Brazilian Census of the year 2000. These variables encompass population, per capita income, household access to the sewage network, computer and automobile ownership, as well as the distribution

of workers across different sectors of economic activity and the share of formal, informal, and self-employed workers. Table 1 displays descriptive statistics for these variables.

Labor market survey I construct the main labor market variables from a quarterly labor market survey that is statistically representative of the Sao Paulo Metropolitan Area. This survey, *Pesquisa Emprego e Desemprego*, was conducted until the year 2018 by *Fundação SEADE*, the Sao Paulo State Government's statistical bureau and interviewed in each quarter a cross-section of approximately 8,500 households. The survey, in principle, divides the SP Metropolitan Area in 134 regions, consisting of 38 municipalities and 96 administrative districts within São Paulo city. However, since sampling was not stratified by regions, three small regions never appeared in the sample during the period considered in the analysis. This survey provides information on standard labor market variables such as labor market participation and hours worked as well as basic demographics such as education, age, and race. However, it does not provide the marital status for respondents, which is a key information for the empirical strategy. To address this limitation, I keep only households with a single family and define the marital status based on the household's family structure. Specifically, I consider individuals as "married" if they occupy the positions of chief and spouse within the family, with the man being the chief and the woman being the spouse. Homosexual couples are infrequent in the sample, and families with a woman in the chief position and a man in the spouse position also represent a small proportion of total families. Finally, it is impossible to distinguish between formal and informal couples, but it does not seem to have adverse implications for the empirical strategy, as MPL itself does not make this differentiation when addressing cases of domestic violence.

Police stations and police productivity At the time the MPL was approved there were 22 police stations devoted to handling cases of domestic violences and other 175 standard police stations. For each one I obtained the precise address. Besides, the Department provides for each police station monthly statistics of productivity measures such as the number of arrests made and investigations initiated.

Conditional cash transfer In 2004, the Brazilian conditional cash transfer program Bolsa Família was launched. Since then, the Brazilian Government provides monthly data on the total number of families assisted by the program in each of the 39 municipalities in the SP Metropolitan Region. However, for the city of São Paulo, I would like to observe the monthly evolution in the number of families in each district so that I can match the same 134 regions of the labor market survey. I construct the monthly variable at the district level for São Paulo using the following approach. I use yearly snapshots of the total number of supported families by district in São Paulo from 2006 to 2014, which are provided by the São Paulo Municipal

Government. Then, I calculate the proportion of families in each district for each year. Next, for each district in each month, I multiply the city's monthly total number of families in the corresponding year by the share of each district in that year. For the years 2004 and 2005, I use the district shares of 2006. Similarly, for years 2015 and 2016, I utilize the district shares of 2014.

5 Research Design

To evaluate the impact of the MPL on labor market participation, I will compare the evolution of this outcomes among women with different levels of exposure to the policy. While this protection is theoretically available to all women, from a practical perspective the access to the justice system varies substantially. One important dimension of such variation is the spatial heterogeneity in the access to police stations, which serves as the initial entry point into the justice system in Brazil. The main research hypothesis is that once the MPL was introduced, women living in regions with easier access to police stations had facilitated access to the protection implied by the law due to an increased likelihood of reporting a domestic violence case.

There is no women unprotected by the law. Thus, I estimate an average causal response to shed light on the effect of increased access to the protection provided by the MPL on labor market participation through the access to the police stations. Using multiple waves of the household labor market survey, I estimate the effect in a difference-in-differences framework by leveraging the variation of the average minimum distance of survey respondents to a police station, which is the treatment variable. The definition of the treatment variable, potential confounding factors, the assumptions required in the analysis, and the empirical strategy implemented to estimate the effects are presented below.

5.1 The Treatment Variable and Potential Confounders

The treatment variable is computed at the region level and is defined as the average minimum distance that women in that region should approximately commute to reach a Standard PS. Here, I outline the construction of this variable.

Knowing the precise location of police stations across the SP metro area, I can measure the distance of each census tract in Sao Paulo to each police station and select the minimum distance among all distances. Then, I identify what census tracts belong to each region present in the labor market survey. Finally, I compute the average minimum distance of each region as the average of the census tracts' minimum distances weighted by the population of women in each census tract.

Importantly, the labor market survey uses a two-stage sample design in which the first stage consists in selecting census tracts with probability proportional to the population. In the second stage, households within the census tracts are randomly selected. Thus, if I knew the precise location of each worker in the survey, I could calculate for each one the minimum distance to a police station, and by averaging this distance over all the respondents in the sample I should expect to get an average for quite similar to the average distance I can compute by using the measure constructed through the above procedure. Of course, the treatment variable I use in the paper certainly implies some loss of statistical power compared to having the precise location of each worker in the sample.

A concern with the treatment variable defined is its potential to capture additional characteristics of each region's workers beyond the mere ease of accessing a police station. During the period from 2000 to 2010, the Brazilian conditional cash transfer program, known as Bolsa Família, underwent a significant expansion. Between 2004 and 2007 – the MPL was approved in September 2006 – the number of families receiving assistance through the program rose from 45,000 to 240,000. Subsequently, in 2009, there was another expansion, increasing the number of assisted families by 35%.

Table 1 shows that regions situated farther away from police stations tend to be larger and have lower economic status than regions in closer proximity. Consequently, it is expected that regions with a higher average distance to a police station, as indicated by the measure, experienced an increase in the number of families benefiting from cash transfers during this period. This is an important margin that could affect the distribution of bargaining power within households, influencing decisions related to labor supply (Novella et al., 2021), as well as impacting levels of domestic violence (Hidrobo and Fernald, 2013).

Additionally, it is worth noting that Brazil experienced an 83% increase in real minimum wage from 2001 to 2018, and there are documented effects of this rise in the minimum wage on poverty and inequality (Sotomayor, 2021; Engbom and Moser, 2022). As Table 1 also displays, there is also a correlation between the distance measure and the distribution of workers across various sectors and types of job contracts, such as formal, informal, and self-employed. This heterogeneity suggests that the impact of the minimum wage increase may vary across regions, potentially confounding the estimation of the effects of interest. I will account for these confounding factors in the empirical specification.

5.2 Identification and Empirical Strategy

The simplest equation to implement the DID estimator of interest under the available structure of repeated cross-sections is

$$y_{i,t} = \phi_{r(i)} + \lambda_{a(t)} + \beta \left(\text{Post}_t \times \text{distance}_{r(i)}\right) + \varepsilon_{i,t} \tag{1}$$

In this equation, $r(i)$ denotes worker i's region and $a(t)$ denotes the year containing month t. The dependent variable is labor market participation $y_{i,t}$ of worker i surveyed in month t. The fixed effects, $\phi_{r(i)}$ and $\lambda_{a(t)}$, captures the region and year-specific influences that may affect participation. The average minimum distance of workers to a Standard PS in region $r(i)$ is $\text{distance}_{r(i)}$, which I interact with $\text{Post}_t = \mathbb{1}_{[2007 \leq a(t)]}$ that indicates all periods after the enactment of the MPL. The error term is $\varepsilon_{i,t}$.

One can show that the two-way fixed-effects estimator for β is a weighted average of all region-to-region/pre-post comparisons, in which higher weights are given to comparisons between regions that differ most in terms of access to the police station. This is analogous to the interpretation of decomposition results in the discussion about the DID approach with variation in treatment timing (Goodman-Bacon, 2021). Thus, for (1) to produce a consistent estimate of the average causal response, the identification assumption must ensure that all 2x2 comparisons are indeed valid, which means that

$$E\left[y_{r(i),t}(0) - y_{r(i),t-1}(0) | \text{distance}_{r(i)} = d\right] = E\left[y_{r(i),t}(0) - y_{r(i),t-1}(0) | \text{distance}_{r(i)} = d'\right] \tag{2}$$

for all d, d' must hold (Callaway et al., 2021).

Under the additional assumption that the coefficients on covariates a are constant over time, I rewrite (1) it to include basic demographic controls and variables to account for the potential confounders discussed in the last section:

$$y_{i,t} = \phi_{r(i)} + \lambda_{a(t)} + \beta \left(\text{Post}_t \times \text{distance}_{r(i)}\right) + \mathbf{x}'_{i,t}\theta + \delta \text{CCT}_{r(i),t} + \left(a(t) \times \mathbf{z}'_{r(i)}\right)\gamma + \varepsilon_{i,t}. \tag{3}$$

The vector $\mathbf{x}'_{i,t}$ encompasses education, race, age, and age squared for worker i in t. The variable $\text{CCT}_{r(i),t}$ denotes the share of assisted families by the conditional cash transfer program in region $r(i)$ month t, and baseline characteristics of regions in the year 2000 contained in the vector $\mathbf{z}'_{r(i)}$ are interacted with a linear trend. The vector of baseline characteristics includes per capita income, access to a sewage network, computer ownership, automobile ownership, and the distribution of workers across economic sectors and type of job contract within a region. Finally, there is the error term $\varepsilon_{i,t}$.

Besides, I report results modifying (3) by interacting the variable $\text{distance}_{r(i)}$ with the in-

dicators PostMPL $= \mathbb{1}\left[2007 \leq a(t) < 2012\right]$ and PostSC $= \mathbb{1}\left[2012 \leq a(t)\right]$ to estimate the average causal response separately for the period between the MPL and the Supreme Court Decision and after the decision. Furthermore, I will plot the estimates for each β^j of the following event-study specification

$$y_{i,t} = \phi_{r(i)} + \lambda_{a(t)} + \sum_{j=2004}^{2016} \beta^j \left(\mathbb{1}\left[a(t) = j\right] \times \text{distance}_{r(i)}\right) + \mathbf{W}'_{i,t}\Gamma + \varepsilon_{i,t}. \tag{4}$$

where $\mathbf{W}'_{i,t}$ collapses all control variables included in (3).

Women are the primary beneficiaries of the MPL's legal protections. Though it does not preclude men from being benefited from its legal protection, victims are hardly ever women. Thus, if there is no confounding factors, estimates for β using the sample of married men should be statistically zero . To test this hypothesis, I run regressions (1) to (3) with the samples for women and men separately. Then, to formally test the difference between the coefficients I use the pooled sample and estimate extended versions of (1) to (3) fully interacted with a dummy variable for being woman and with region-by-gender-specific fixed-effects. To illustrate the approach, consider the extended version of specification (1):

$$y_{i,t} = \phi_{r(i),g(i)} + \lambda_{a(t),g(i)} + \beta \left(\text{Post}_t \times \text{distance}_{r(i)}\right) + \beta^{\text{diff}} \left(\text{Woman}_i \times \text{Post}_t \times \text{distance}_{r(i)}\right) + \varepsilon_{it} \tag{5}$$

where $g(i)$ represents the gender of individual i. Notice that (5) allows for flexibility in the fixed-effects ϕ and λ in this dimension. The estimate for β is the same as the one estimated in equation (1) using the sample of married men. On the other hand, β^{diff} estimates the difference between the estimate in the sample of married women and the the estimate in the sample of married men.

Another approach to estimate this difference is by using family-fixed effect in a specification similar to (1). This change makes it impossible to estimate the baseline effect for men as $distance_{r(i)}$ is the same for all household members. However, it still allows the estimation of the differential effect for women relative to men. The advantage of this strategy is its robustness against selection bias stemming from the evolution of unobservable family characteristics over time. One potential source of such bias is the occurrence of shocks in the marriage market that may have varying impacts across regions.

In all of the above specification, standard errors are clustered at the region level in all specifications.

6 Results

6.1 Labor market participation

Table 1 presents the first results of the paper. In column 1, the estimate for the average causal response according to equation 1 is -0.01, which is statistically significant at a 5% level. To understand the magnitude of this estimate, consider that the 10^{th} percentile of the distance to a Standard PS for married women is 1.1 km and that the 90^{th} percentile is 2.7 km. Changing the distance to a Standard PS of women at the 90^{th} percentile to be the same as women's distance at the 10^{th} percentile in the period after the MPL, a 59% decrease, would cause a 2.7% increase in the participation rate from 59.0% to 60.6%.

Column 2 shows a larger point estimate of -0.013 when controls are included (equation 3) which is also statistically significant. Performing the same exercise of moving women between percentiles of distance to a Standard PS, while accounting for controls, results in a 2.6% increase in the participation rate. To address concerns about potential unobservable differences between regions, I estimate the effects on the participation rate of married men. If the effects of columns 1 and 2 are indeed due to the implementation of MPL, I would not expect any effects on the participation rate of men, and estimates different from zero could raise concerns about the identification strategy. Columns 3 and 4 show that the estimates for men are statistically indistinguishable from zero.

By pooling the samples of women and men and estimating equation (5) with and without controls I can test the difference between the estimated coefficients for women and men in columns 1 to 4. The coefficients for the triple interaction in columns 5 and 6 show estimates for these differences, and I can reject the equality of the estimates for women and men. Finally, column 7 presents the estimate for the differential effect on women and men within the same family. This estimate is obtained by controlling for family fixed-effects, which accounts for compositional changes in unobservable family characteristics over time. The estimate of -0.01 in column 7 is slightly more precise than the estimate in column 6.

6.2 Dynamic effects

The descriptive analysis of section 2 showed two important landmarks in the implementation of the MPL. First, there was the enactment of the law itself, and then the year 2012 when the Brazilian Supreme Court strengthened the law's authority in domestic violence cases.

Table 5 presents the results distinguishing both periods to examine a potential dynamic effect considering the Supreme Court decision. Columns 1 and 2 display estimates for married

women, both with and without controls. In both cases, the estimated average causal response is higher from 2012 onwards.

In column 2, both coefficients are statistically significant at the 1% level. The estimate of -0.017 for the period after the Supreme Court decision is 41.7% higher than the -0.012 estimate for the interval after the MPL but before the decision. Once again, no detectable effect on married men is observed, and the results in columns 5 to 7 reject the hypothesis of equality between the estimates for men and women.

However, it is noteworthy that the -0.01 estimate for differential effect, which is robust to selection on family unobservables, is one-third lower than the corresponding estimate in column 6. To further investigate this, I plot in Figure 2 the coefficient of the women-men differential effect from the event-study specification with all control variables and family fixed-effects.

I do not reject the hypothesis of zero effect after 2013, whether I test the joint significance of the event-study coefficients ($p = 0.81$) or a single coefficient for an indicator of this period ($p = 0.41$). However, I reject the joint hypothesis that the coefficients for 2012, the year the Supreme Court acted, and 2013 are equal to zero ($p = 0.002$) and the hypothesis with a single indicator for the period ($p = 0.063$).

Although the equality of all the event-study coefficients from 2007 to 2013 cannot be rejected, the plot indicates that the estimated effect for 2012 could have been twice as large as the estimate for most of the preceding period. Subsequently, after 2012, the effect seemed to gradually become a statistical zero. This pattern is consistent with two results suggesting a reduction of domestic violence in the period. Using national data, Ferraz and Schiavon (2022) report that the MPL reduced homicides due to household aggression by 9 percent. Their results suggest a gradual decline of violence, but the effect is noticeably stronger after 2012. Moreover, Figure 3 indicates that during this period, reports of DV at Women Police Stations decreased, while at Standard Police Stations, it ceased to increase.

Table 5 reports results using the average minimum distance to a Women PS rather than a Standard PS as the treatment variable. I cannot identify any substantial effect using this treatment variable. Nevertheless, the prior estimates could partially reflect the potential effects of this proximity, as 9 out of the 22 WPS operate in the same building as some Standard PS.

6.3 Hetereogeneous effects

Here, I analyze the impact of facilitated access to Standard PS across various racial and educational groups using the family fixed-effects specification. The findings suggest that the effects primarily stem from white women and individuals who have completed at least high school.

The impact on black women is not statistical significanct at standard levels. Across both periods, before and after the Supreme Court decision, the effect cannot be rejected as zero, with estimates of -0.007 and -0.004, respectively. The average effect on white women is estimated to be -0.012, which is statistically significant at a 5% level. Although point estimates suggest a strengthening effect over time with law enforcement, I cannot reject the hypothesis that the coefficients of both periods are equal. Similar results are observed for women who have attained at least a high school education, with a more precise estimate of -0.013, which is statistically significant at a 1% level. In both cases, this translates into a 3% increase in participation, for a 60% decrease in the average distance to a Standard PS. [5] For women with less than a high school education, the point estimate is -0.009, significant at a 10% level, indicating an average effect that is 31% lower compared to more educated women.

The findings indicate that the policy had a more substantial impact on women with relatively higher bargaining power (if we proxy it by the educational level) in terms of their labor market participation.

7 Conclusion

This paper examined the impact of a policy aimed at reducing domestic violence on women's labor market participation in Brazil. The policy empowered police officers to intervene in reported domestic violence cases, leading to a redistribution of bargaining power in favor of women within households. Using a difference-in-differences approach with data from Sao Paulo, Brazil, the study found that reducing the distance to a police station by 60% resulted in a 2.6% increase in labor market participation among married women. The effect is driven by the impact on women with higher education levels. The research contributes to the understanding of domestic violence deterrence policies and highlights the importance of establishing a legal framework for the work of police stations. An important question for further exploration is how this policy might affect fertility, investment in children, and consumption.

[5] The 60% decrease means moving from the 90^{th} to the 10^{th} percentile of distance.

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A Figures and Tables

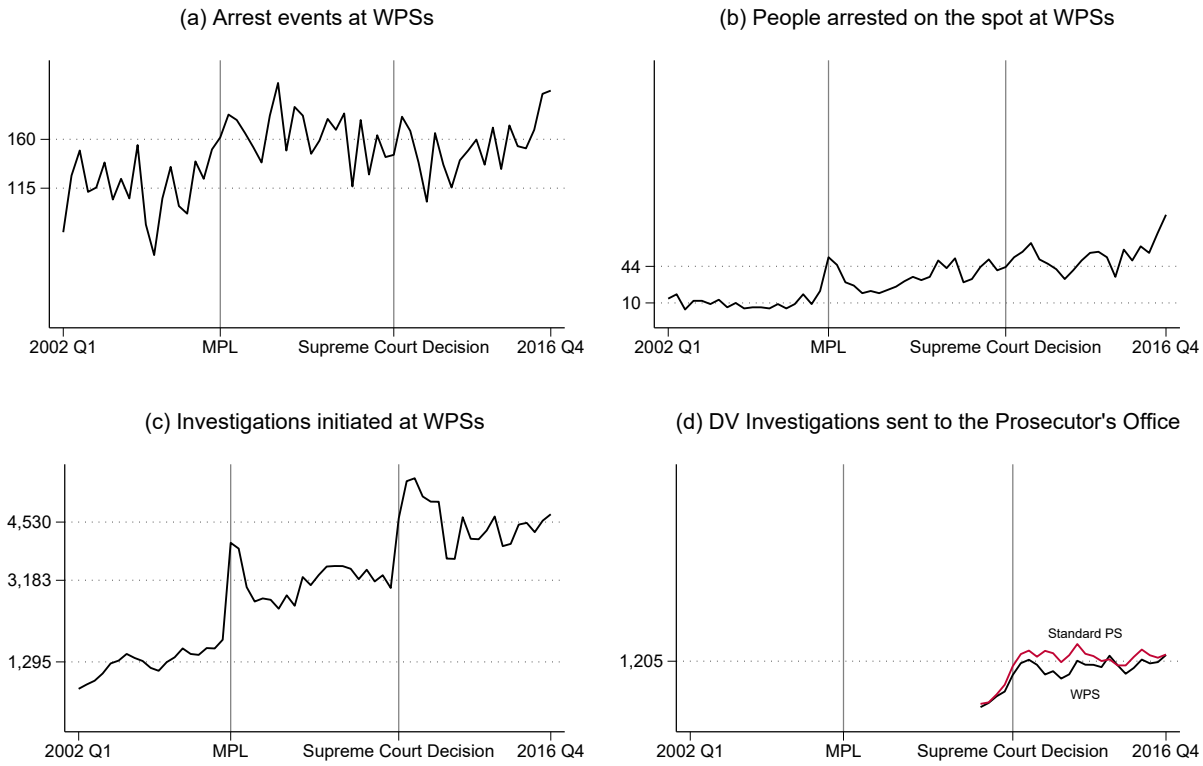

Figure 1: Quarterly evolution of police productivity in the SP Metropolitan Area. Notes: Panels (a), (b), and (c) report productivity measures of Women Police Stations only and panel (d) reports cases from both Standard and Women Police Stations. In each plot , the vertical axis indicates the averages for periods before and/or after the MPL. Sources: Sao Paulo Department of Public Safety and Sao Paulo Prosecutor's Office.

Table 1: Descriptive statistics for the baseline control variables

		By distance to a Standard Police Station		
	All	Closest 25%	Middle 50%	Farthest 25%
	(1)	(2)	(3)	(4)
Population	136,236	90,680	145,101	164,933
	(139,500)	(52,385)	(119,009)	(214,129)
Per capita income	2,706.15	3,905.10	2,772.93	1,332.00
	(2306.15)	(2631.53)	(2333.09)	(501.92)
Panel A. Share of households with				
Connection to the sewage network	0.82	0.96	0.88	0.55
	(0.21)	(0.05)	(0.12)	(0.22)
Computer	0.24	0.33	0.26	0.11
	(0.16)	(0.14)	(0.17)	(0.06)
Automobile	0.35	0.38	0.35	0.32
	(0.06)	(0.06)	(0.05)	(0.04)
Panel B. Share of workers in each sector				
Industry	0.19	0.16	0.19	0.25
	(0.07)	(0.06)	(0.05)	(0.07)
Construction	0.06	0.04	0.06	0.10
	(0.03)	(0.02)	(0.03)	(0.02)
Retail	0.19	0.20	0.19	0.17
	(0.03)	(0.04)	(0.02)	(0.03)
Services	0.42	0.49	0.44	0.32
	(0.10)	(0.08)	(0.08)	(0.06)
Domestic workers	0.07	0.05	0.07	0.11
	(0.04)	(0.02)	(0.03)	(0.05)
Others	0.06	0.06	0.05	0.06
	(0.02)	(0.02)	(0.02)	(0.02)
Panel C. Share of workers by type of contract				
Formal	0.49	0.48	0.50	0.48
	(0.05)	(0.03)	(0.03)	(0.07)
Informal	0.25	0.23	0.25	0.29
	(0.05)	(0.03)	(0.04)	(0.05)
Self-employed	0.20	0.22	0.20	0.19
	(0.03)	(0.03)	(0.02)	(0.02)
Others	0.05	0.07	0.05	0.04
	(0.04)	(0.04)	(0.04)	(0.02)
Regions	131	33	66	32

Note: Each cell presents regional averages along with the corresponding standard errors indicated in parentheses. Column 1 includes data from all regions, while columns 2 to 3 divide the sample based on the distribution of regions' average minimum distance to a Standard PS. Source: Brazilian 2000 Census.

Table 2: Effects on Labor Market Participation

	Women		Men		Both		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post × Distance to a PS	-0.009**	-0.013***	-0.002	-0.003	-0.002	-0.003	
	(0.004)	(0.005)	(0.002)	(0.003)	(0.002)	(0.003)	
Woman × Post × Distance to a PS					-0.007*	-0.010**	-0.010***
					(0.004)	(0.005)	(0.004)
Controls	No	Yes	No	Yes	No	Yes	Yes
Observations	277,854	277,854	277,854	277,854	555,708	555,708	555,708
R^2	0.01	0.09	0.00	0.16	0.10	0.19	0.61

Notes: The dependent variable is participation in the labor market for married adults aged 24-65. Columns 5 and 6 present coefficients based on the fully interacted specification with a "Woman" dummy variable. The first row of columns 5 and 6 represents the estimates for men, which are identical to those shown in columns 3 and 4, respectively. The second row of columns 5 and 6 displays the estimates for differences between women and men. Column 7 displays the estimate for differences between women and men using the family fixed-effects specification. Standard errors are clustered at the region level ($n = 131$). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Effects on Labor Market Participation – Dynamic effects

	Women		Men		Both		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post LMP × Distance to a PS	-0.008*	-0.012***	-0.003	-0.003	-0.003	-0.003	0.000
	(0.004)	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)	(.)
Post STF × Distance to a PS	-0.011***	-0.017***	-0.001	-0.002	-0.001	-0.002	0.000
	(0.004)	(0.006)	(0.003)	(0.003)	(0.003)	(0.003)	(.)
Woman × Post LMP × Distance to a PS					-0.005	-0.010*	-0.009**
					(0.004)	(0.005)	(0.005)
Woman × Post STF × Distance to a PS					-0.009**	-0.015**	-0.010**
					(0.004)	(0.006)	(0.004)
Controls	No	Yes	No	Yes	No	Yes	Yes
Observations	277,854	277,854	277,854	277,854	555,708	555,708	555,708
R^2	0.01	0.09	0.00	0.16	0.10	0.19	0.61

Notes: The dependent variable is participation in the labor market for married adults aged 24-65. Columns 5 and 6 present coefficients based on the fully interacted specification with a "Woman" dummy variable. The first row of columns 5 and 6 represents the estimates for men, which are identical to those shown in columns 3 and 4, respectively. The second row of columns 5 and 6 displays the estimates for differences between women and men. Column 7 displays the estimate for differences between women and men using the family fixed-effects specification. Standard errors are clustered at the region level ($n = 131$). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

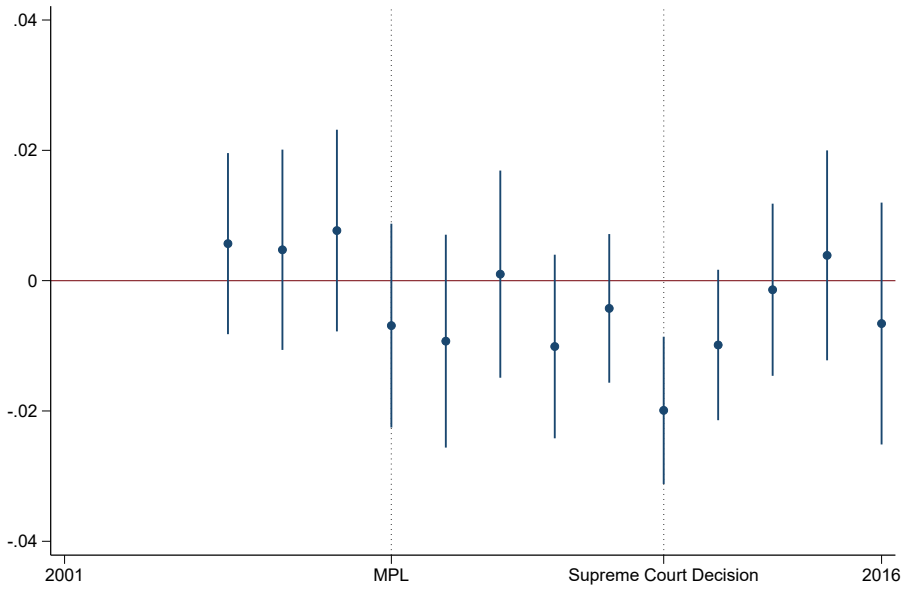

Figure 2: Estimates of the women-men differential effect from the event-study specification with all control variables and family fixed-effects. The dependent variable is labor market participation, and the sample contains all families with women and men aged 24-65. Vertical bars represent 95% confidence intervals.

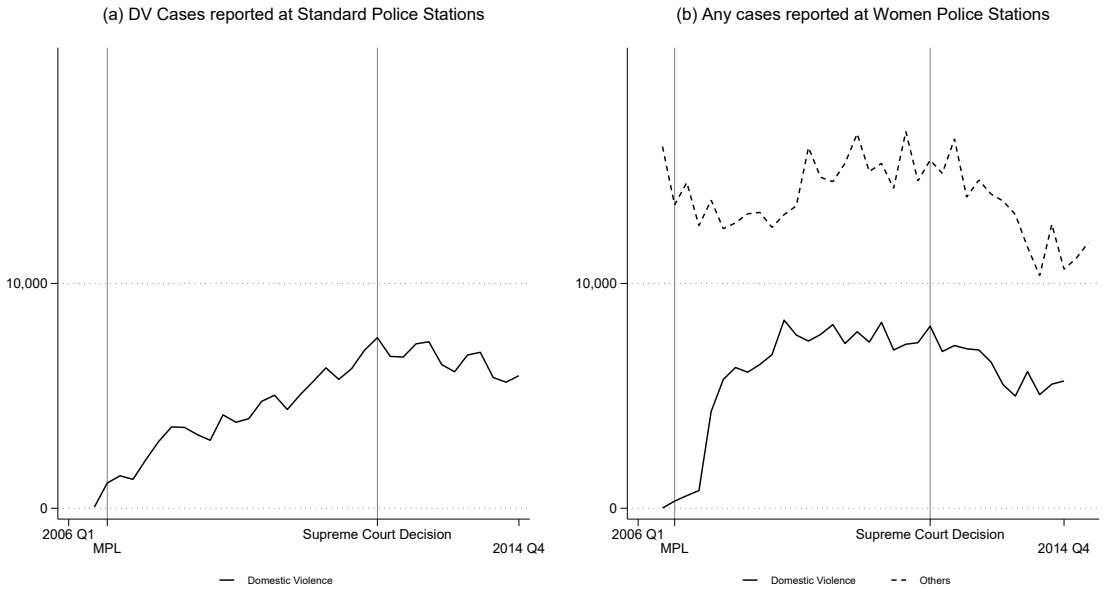

Figure 3: Quarterly evolution of domestic violence cases reported in the SP Metropolitan Area. Source: Sao Paulo Department of Public Safety.

Table 4: Effects on Labor Market Participation – Dynamic effects using regions' average minimum distance to a WPS)

	Women		Men		Both		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post LMP × Distance to a WPS	-0.000	-0.001	0.001	0.001	0.001	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(.)
Post STF × Distance to a WPS	-0.001	-0.001	0.001	0.001	0.001	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(.)
Woman × Post LMP × Distance to a WPS					-0.001	-0.001	-0.002
					(0.001)	(0.001)	(0.001)
Woman × Post STF × Distance to a WPS					-0.002*	-0.002**	-0.002*
					(0.001)	(0.001)	(0.001)
Controls	No	Yes	No	Yes	No	Yes	Yes
Observations	277,854	277,854	277,854	277,854	555,708	555,708	555,708
R^2	0.01	0.09	0.00	0.16	0.10	0.19	0.61

Notes: The dependent variable is participation in the labor market for married adults aged 24-65. Columns 5 and 6 present coefficients based on the fully interacted specification with a "Woman" dummy variable. The first row of columns 5 and 6 represents the estimates for men, which are identical to those shown in columns 3 and 4, respectively. The second row of columns 5 and 6 displays the estimates for differences between women and men. Column 7 displays the estimate for differences between women and men using the family fixed-effects specification. Standard errors are clustered at the region level ($n = 131$). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Effects on Labor Market Participation – Women-men difference by race and education

	Black		White		High school or above		Less than High School	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Woman × Post × Distance to a PS	-0.005		-0.012**		-0.013***		-0.009*	
	(0.004)		(0.004)		(0.004)		(0.005)	
Woman × Post LMP × Distance to a PS		-0.007		-0.010*		-0.013**		-0.007
		(0.005)		(0.005)		(0.005)		(0.007)
Woman × Post STF × Distance to a PS		-0.004		-0.013**		-0.013**		-0.011*
		(0.005)		(0.005)		(0.006)		(0.006)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	193,184	193,184	362,524	362,524	269,660	269,660	286,048	286,048
$\hat{y}$ at Post = 1 and distance at								
10^{th} pct	0.677		0.644		0.738		0.575	
90^{th} pct	0.669		0.625		0.716		0.562	

Notes: The dependent variable is participation in the labor market for married adults aged 24-65. All estimates are the difference between women and men using the family fixed-effects specification. Each sample comprises head and spouse of each family and is selected based on the characteristics of the woman. Standard errors are clustered at the region level ($n = 131$). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.